CLAIMS

1. A DNA sequence comprising the DNA sequence SEQ ID NO: 1 and encoding a glucocorticoid-induced leucine-zipper family related protein (GILR).

2. A DNA sequence according to claim 1 selected from the group consisting of :

(a) a cDNA sequence derived from the coding region of a native GILR protein;

(b) DNA sequences capable of hybridization to a sequence of (a) under stringent conditions and which encode a biologically active GILR protein; and

(c) DNA sequences which are degenerate as a result of the genetic code to the DNA sequences defined in (a) and (b) and which encode a biologically active GILR protein.

3. A DNA sequence according to claim 1 ~~or claim 2~~ comprising at least part of the DNA sequence SEQ ID NO: 1 and encoding at least one active GILR protein.

4. A DNA sequence according to claim 3 encoding a GILR protein comprising the amino acid sequence SEQ ID NO: 2.

5. A DNA sequence according to claim 1 ~~or claim 2~~ comprising at least part of the DNA sequence SEQ ID NO: 5 and encoding at least one active human GILR protein

6. A DNA sequence according to claim 5 encoding a human GILR protein comprising the amino acid sequence SEQ ID NO: 6.

7. A vector comprising a DNA sequence according to ~~any one of claims 1-6~~ claim 1.

8. A vector according to claim 7 capable of being expressed in a eukaryotic host cell.

9. A vector according to claim 7 capable of being expressed in a prokaryotic host cell.

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10. Transformed eukaryotic or prokaryotic host cells containing a vector according to claim 7 ~~any one of claims 7-9~~.

11. A GILR protein or derivatives thereof encoded by a DNA sequence according to claim 1 ~~any one of claims 1-6~~, said protein and derivatives thereof being capable of inhibiting apoptosis and stimulating lymphocyte activity.

12. A GILR protein and derivatives thereof according to claim 11, wherein said protein and derivatives have at least part of the amino acid sequence SEQ ID NO: 2 or of the amino acid sequence SEQ ID NO: 5.

13. Process for the preparation the GILR protein or derivatives thereof ~~according to claim 11 or 12~~, comprising growing the transformed host cells according to claim 12 under conditions suitable for the expression of said proteins, effecting post-translational modifications as necessary for obtaining of said protein or derivatives and isolating said expressed protein or derivatives.

14. Antibodies or active fragments or derivatives thereof, specific for the GILR protein or derivatives according to claim 11 ~~or 12~~.

15. Use of a GILR protein according to claim 11 ~~or 12~~ in the manufacture of a medicament for the inhibition of apoptosis in cells, mediated by the Fas/FasL system, CD3/TCR system or other intracellular mediators of apoptosis, comprising treating said cells with one or more GILR proteins or derivatives according to claim 11 ~~or 12~~, wherein said treating of said cells comprises introducing into said cells said one or more proteins or derivatives in a form suitable for intracellular introduction thereof, or introducing into said cells a DNA sequence encoding said one or more proteins or derivatives in the form of a suitable vector carrying said sequence, said vector being capable of effecting the insertion of said sequence into said cells in a way that said sequence is expressed in said cells.

16. Use according to claim 15, wherein said treating of cells comprises introducing into said cells a DNA sequence encoding said GILR protein or derivatives in the form of a suitable vector carrying said sequence, said vector being capable of effecting the insertion of said sequence into said cells in a way that said sequence is expressed in said cells.

17. Use according to claim 15 or 16 wherein said treating of said cells is by transfection of said cells with a recombinant animal virus vector comprising the steps of :

(a) constructing a recombinant animal virus vector carrying a sequence encoding a viral surface protein (ligand) that is capable of binding to a specific cell surface receptor on the surface of said cells to be treated and a second sequence encoding a protein selected from the GILR protein and derivatives according to claim 9 or 10, that when expressed in said cells is capable of inhibiting apoptosis; and

(b) infecting said cells with said vector of (a).

18. Use of a GILR protein according to claim 11 or 12 in the manufacture of a medicament for enhancing apoptosis in cells by inhibiting the activity if GILR proteins in said cells, comprising treating said cells with antibodies or active fragments or derivatives thereof, according to claim 14, said treating being by application of a suitable composition containing said antibodies, active fragments or derivatives thereof to said cells.

19. Use of a GILR protein according to claim 11 or 12 in the manufacture of a medicament for enhancing apoptosis in cells by inhibiting the activity of GILR proteins in said cells, comprising treating said cells with an oligonucleotide sequence encoding an antisense sequence for at least part of the DNA sequence encoding a GILR protein according to any one of claims 1-6, said oligonucleotide sequence being capable of blocking the expression of the GILR protein.

20. Use according to claim 19 wherein said oligonucleotide sequence is introduced to said cells via a virus of claim 17 wherein said second sequence of said virus encodes said oligonucleotide sequence.

21. Use of a GILR protein according to claim 11 ~~or 12~~ in the manufacture of a medicament for treating tumor cells or HIV-infected cells or other diseased cells, to enhance apoptosis in said cells by inhibiting the activity of GILR proteins in said cells, comprising:

(a) constructing a recombinant animal virus vector carrying a sequence encoding a viral surface protein capable of binding to a specific tumor cell surface receptor or HIV-infected cell surface receptor or receptor carried by other diseased cells and a sequence encoding an inactive GILR mutant protein, said mutant protein, when expressed in said tumor, HIV-infected, or other diseased cell is capable of inhibiting the activity of normal endogenous GILR and enhancing apoptosis in said cells; and

(b) infecting said tumor or HIV-infected cells or other diseased cells with said vector of (a).

22. Use of a GILR protein according to claim 11 ~~or 12~~ in the manufacture of a medicament for enhancing apoptosis in cells by inhibiting the activity of GILR proteins in said cells, comprising applying the ribozyme procedure in which a vector encoding a ribozyme sequence capable of interacting with a cellular mRNA sequence encoding a GILR protein according to claim 11 ~~or 12,~~ is introduced into said cells in a form that permits expression of said ribozyme sequence in said cells, and wherein when said ribozyme sequence is expressed in said cells it interacts with said cellular mRNA sequence and cleaves said mRNA sequence resulting in the inhibition of expression of said GILR protein in said cells.

23. Use of a GILR protein according to claim 11 ~~or 12~~ in the manufacture of a medicament for enhancing apoptosis in cells by inhibiting the activity of GILR proteins in said cells, comprising introducing into said cells a peptide that is capable of binding the normal endogenous GILR in said cells and inhibiting its activity thereby enhancing apoptosis.

24. A process for isolating and identifying proteins, according to claim 11 ~~or 12~~, which are GILR-like proteins belonging to the leucine zipper family or are proteins capable of binding directly to GILR, comprising applying the yeast two-hybrid procedure in which a sequence encoding said GILR is carried by one hybrid vector and sequence from a cDNA or genomic DNA library is carried by the second hybrid vector, the vectors then being used to transform yeast host cells and the positive transformed cells being isolated, followed by extraction of the said second hybrid vector to obtain a sequence encoding a protein which binds to said GILR.

25. The use according to ~~any one of claims 15-23~~ claim 15 wherein said protein is at least one of the GILR proteins and derivatives thereof.

26. A pharmaceutical composition for the inhibition of apoptosis in cells or for stimulating lymphocyte activation, comprising, as active ingredient, at least one GILR protein, according to claim 11 ~~or 12~~, its biologically active derivatives or mixtures thereof.

27. A pharmaceutical composition for inhibiting apoptosis in cells or for stimulating lymphocyte activation comprising, as active ingredient, a recombinant animal virus vector encoding a protein capable of binding a cell surface receptor and encoding at least one GILR protein or derivatives according to claim 11 ~~or 12~~.

28. A pharmaceutical composition for enhancing apoptosis in cells by inhibiting GILR activity in said cells, comprising as active ingredient, an oligonucleotide sequence encoding an anti-sense sequence of the GILR protein mRNA sequence according to ~~any one of claims 1-6~~ claim 1.

29. A pharmaceutical composition for enhancing apoptosis in cells by inhibiting GILR activity in said cells, comprising, as active ingredient, an inactive mutant GILR protein or DNA sequence encoding said inactive mutant GILR protein, which GILR mutant, when

introduced into, or expressed in, said cells inhibits the activity of the normal endogenous GILR protein.

30. A pharmaceutical composition for enhancing apoptosis in cells by inhibiting GILR activity in said cells, comprising, as active ingredient, a peptide capable of binding to the active site or the leucine zipper domain of GILR and thereby inhibiting normal endogenous GILR activity in cells.

~~31. A GILR protein, according to any one of claims 11 or 12, for use as a medicament.~~

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